

Claims

What is claimed is:

1. A switch-mode generated DC powered computer system comprising:
 - a. a utility power input which supplies AC utility power having a line frequency;
 - 5 b. a line voltage rectifier element which converts said AC utility power to a DC signal;
 - c. a switch-mode inverter element having at least one switch responsive to said DC signal which establishes an alternating power output at at least an inherent capacitance-coordinated frequency having an inverter period;
 - d. a frequency driver which controls said switch-mode inverter element to establish a
10 frequency at at least said inherent capacitance-coordinated frequency;
 - e. a supply transformer element which is responsive to said alternating power output and which establishes at least one distribution output at at least one distribution voltage;
 - f. a power distribution system responsive to said supply transformer element and which provides computer components power at locations electrically remote from said switch-
15 mode inverter element;
 - g. at least one low voltage, high current computer component capable of a rapid energy demand within said inverter period and requiring a component DC supply voltage; and
 - h. at least one electrically remote voltage regulation module responsive to said power distribution system and located electrically near said low voltage, high current computer
20 component comprising:
 - 1) at least one voltage regulation module transformer element which establishes an alternating low voltage computer component output; and
 - 2) at least one voltage regulation module rectifier element which converts said
25 alternating low voltage computer component output to said a component DC supply voltage and to which said low voltage, high current computer component is responsive.
2. A switch-mode generated DC powered computer system as described in claim1 wherein said frequency driver comprises a high frequency driver.
3. A switch-mode generated DC powered computer system as described in claim2 wherein

- said high frequency driver comprises a frequency driver operating at a frequency selected from a group consisting of: a frequency greater than at least about 300 kHz, a frequency greater than at least about 500 kHz, a frequency greater than at least about 1 MHz, a frequency greater than at least about 3 MHz, a frequency greater than at least about 10 MHz, and a frequency greater than at least about 30 MHz.
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4. A switch-mode generated DC powered computer system as described in claim3 wherein said inherent capacitance-coordinated frequency is coordinated with an inherent capacitance of said switch, said supply transformer element, and said power distribution system.
- 10 5. A switch-mode generated DC powered computer system as described in claim3 switch-mode inverter element has an inverter switch having output capacitance and wherein said inherent capacitance-coordinated frequency is coordinated with said output capacitance of said switch.
- 15 6. A switch-mode generated DC powered computer system as described in claim 3 switch-mode inverter element has a mosfet transistor having output capacitance and wherein said inherent capacitance-coordinated frequency is coordinated with said output capacitance of said mosfet transistor.
- 20 7. A switch-mode generated DC powered computer system as described in claim2 wherein said high frequency driver comprises a frequency driver operating at a frequency which is high enough to permit elimination of a bulk capacitor.
8. A switch-mode generated DC powered computer system as described in claim3 wherein said at least one low voltage, high current computer component comprises at least one microprocessor affected by bypass capacitors.
- 25 9. A switch-mode generated DC powered computer system as described in claim8 wherein said bypass capacitors supply substantially all of said rapid energy demand of said computer component within said inverter period.

10. A switch-mode generated DC powered computer system as described in claim8 wherein said at least one low voltage, high current computer component further comprises: at least one memory element; a logic management system, at least one input/output element.
- 5 11. A switch-mode generated DC powered computer system as described in claim10 wherein said at least one low voltage, high current computer component further comprises at least a second low voltage, high current computer component capable of a rapid energy demand within said inverter period and requiring a second component DC supply voltage and further comprising at least a second electrically remote voltage regulation module responsive to said power distribution system and located electrically near said second low voltage, high current computer component and comprising;
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- 1) at least a second voltage regulation module transformer element which establishes a second alternating low voltage computer component output; and
 - 2) at least a second voltage regulation module rectifier element which converts said
- 15 second alternating low voltage computer component output to said a second component DC supply voltage and to which said second low voltage, high current computer component is responsive.
12. A switch-mode generated DC powered computer system as described in claim1 wherein said power distribution system comprises an alternating signal power distribution system which provides alternating power at locations remote from said switch-mode inverter element.
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13. A switch-mode generated DC powered computer system as described in claim1 wherein said power distribution system comprises a substantially sinusoidal alternating signal power distribution system which provides substantially sinusoidal alternating power at locations remote from said switch-mode inverter element.
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14. A switch-mode generated DC powered computer system as described in claim8 wherein said computer system comprises a personal computer.

15. A switch-mode generated DC powered computer system as described in claim14 wherein said personal computer comprises a display a keyboard, and an output element.
16. A switch-mode generated DC powered computer system as described in claim3 wherein said low voltage, high current computer component comprises a component operating at a nominal DC voltage selected from a group consisting of: less than about 2 volts, less than about 1.8 volts, less than about 1.5 volts, less than about 1.3 volts, less than about 1 volt, and less than about 0.4 volts.
17. A switch-mode generated DC powered computer system as described in claim16 wherein said low voltage, high current computer component comprises a component operating at a maximum current selected from a group consisting of: more than about 15 amperes, more than about 20 amperes, more than about 50 amperes, and more than about 100 amperes.
18. A switch-mode generated DC powered computer system as described in claim17 and further comprising a fast acting response network to which said switch-mode inverter element is responsive and which is responsive to said computer components.
19. A switch-mode generated DC powered computer system as described in claim18 wherein said fast acting response network comprises a network having an effective capacitance selected from a group consisting of: less than about 0.3 millifarads, less than about 0.5 millifarads, less than about 1 millifarads, less than about 3 millifarads, less than about 10 millifarads.
20. A switch-mode generated DC powered computer system as described in claim1 and further comprising:
- a. constant output voltage circuitry which is responsive to said alternating power output of said at least one switch;
 - b. constant trajectory circuitry which is also responsive to said alternating power output of said at least one switch;
 - c. energy maintenance circuitry which is also responsive to said alternating power output

- of said at least one switch; and
- d. stabilizing circuitry which is also responsive to said alternating power output of said at least one switch.
21. A switch-mode generated DC powered computer system as described in claim20 wherein
5 said frequency driver has a drive amplitude, and further comprising direct drive bias alteration circuitry to which said frequency driver is responsive and which is responsive to said drive amplitude.
22. A method of switch-mode powering a DC computer system comprising the steps of:
- a. supplying an AC utility power having a line frequency;
- 10 b. rectifying said AC utility power to a DC signal;
- c. inverting said DC signal utilizing at least one switch to establish an alternating power output at at least an inherent capacitance-coordinated frequency having an inverter period;
- d. driving said switch to establish a frequency at at least said inherent capacitance-coordinated frequency;
- 15 e. transforming said alternating power output to establish at least one distribution output at at least one distribution voltage;
- f. distributing said distribution voltage to a location near at least one low voltage, high current computer component capable of a rapid energy demand within said inverter period at a location electrically remote from said switch;
- 20 g. remotely transforming said distribution voltage at a location electrically near at least one low voltage, high current computer component to establish an alternating low voltage computer component output;
- h. remotely rectifying said alternating low voltage computer component output at a location
25 electrically near at least one low voltage, high current computer component to establish a component DC supply voltage; and
- i. powering said low voltage, high current computer component responsive to said component DC supply voltage.
23. A method of switch-mode powering a DC computer system as described in claim22

wherein said computer component has at least one microprocessor affected by bypass capacitors and further comprising the step of supplying substantially all of said rapid energy demand of said computer component within said inverter period by said bypass capacitors.

5 24. A method of switch-mode powering a DC computer system as described in claim22 wherein said step of distributing said distribution voltage to a location near at least one low voltage, high current computer component comprises the step of distributing an AC signal to a location near at least one low voltage, high current computer component.

10 25. A method of switch-mode powering a DC computer system as described in claim24 wherein said step of distributing an AC signal to a location near at least one low voltage, high current computer component comprises the step of distributing a substantially sinusoidal signal to a location near at least one low voltage, high current computer component.

15 26. A method of switch-mode powering a DC computer system as described in claim22 wherein said low voltage, high current computer component has a varying load and further comprising the step of responding to variations in said varying load by a fast acting response network.

20 27. A method of switch-mode powering a DC computer system as described in claim22 wherein said switch creates a trajectory after a conduction period, and further comprising the steps of:

- a. establishing a constant output voltage through circuitry which is responsive to said alternating power output of said switch;
- b. establishing a constant trajectory through circuitry which is also responsive to said alternating power output of said switch;
- 25 c. maintaining component supply energy through circuitry which is also responsive to said alternating power output of said switch; and
- d. stabilizing said alternating power output through circuitry which is also responsive to said alternating power output of said switch.

28. A switch-generated DC powered computer system comprising:
- a. a utility power input which supplies AC utility power having a line frequency;
 - b. a line voltage rectifier element which converts said AC utility power to a substantially constant DC signal;
 - 5 c. a switch-mode inverter element having at least one switch responsive to said DC signal and which establishes at least one alternating power output;
 - d. a driver which controls said switch-mode inverter element;
 - e. a substantially sinusoidal alternating signal power distribution system which provides substantially sinusoidal alternating power at locations remote from said switch-mode inverter element; and
 - 10 f. at least one voltage regulation module rectifier element responsive to said substantially sinusoidal alternating signal power distribution system and located near said computer component and which converts said substantially sinusoidal alternating power to a substantially constant DC output and to which at least one computer component is responsive.
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29. A switch-generated DC powered computer system as described in claim28 wherein said at least one computer component comprises at least one low voltage, high current computer component, and wherein said substantially sinusoidal alternating signal power distribution system which provides substantially sinusoidal alternating power at locations
- 20 remote from said switch-mode inverter element comprises a distribution system operating at alternating voltages selected from a group consisting of: greater than about 5 volts, greater than about 10 volts, greater than about 15 volts, greater than about 20 volts, greater than about 30 volts, and greater than about 50 volts.
30. A switch-generated DC powered computer system as described in claim29 and further comprising at least one voltage regulation module transformer element which establishes an alternating low voltage computer component output.
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31. A switch-generated DC powered computer system as described in claim30 wherein said at least one low voltage, high current computer component further comprises: at least one memory element; a logic management system, at least one input/output element.

32. A switch-generated DC powered computer system as described in claim31 wherein said at least one low voltage, high current computer component comprises at least one microprocessor affected by bypass capacitors.
33. A switch-generated DC powered computer system as described in claim32 wherein said at least one low voltage, high current computer component is capable of a rapid energy demand within an inverter period and wherein said bypass capacitors supply substantially all of said rapid energy demand of said computer component within said inverter period.
34. A switch-generated DC powered computer system as described in claim31 wherein said at least one low voltage, high current computer component further comprises at least a second low voltage, high current computer component capable of a rapid energy demand within said inverter period and requiring a second component DC supply voltage and further comprising at least a second voltage regulation module responsive to said substantially sinusoidal alternating signal power distribution system and located electrically near said second low voltage, high current computer component and comprising;
- 1) at least a second voltage regulation module transformer element which establishes a second alternating low voltage computer component output; and
 - 2) at least a second voltage regulation module rectifier element which converts said second alternating low voltage computer component output to said a second component DC supply voltage and to which said second low voltage, high current computer component is responsive.
35. A switch-generated DC powered computer system as described in claim31 wherein said computer system comprises a personal computer.
36. A switch-generated DC powered computer system as described in claim35 wherein said personal computer comprises a display a keyboard, and an output element.
37. A switch-generated DC powered computer system as described in claim28 and further comprising a response network comprising:

- a. constant output voltage circuitry which is responsive to said alternating power output of said at least one switch;
 - b. constant trajectory circuitry which is also responsive to said alternating power output of said at least one switch;
 - 5 c. energy maintenance circuitry which is also responsive to said alternating power output of said at least one switch; and
 - d. stabilizing circuitry which is also responsive to said alternating power output of said at least one switch.
38. A switch-mode generated DC powered computer system as described in claim37 wherein
10 said response network comprises a network having an effective capacitance selected from a group consisting of: less than about 0.3 millifarads, less than about 0.5 millifarads, less than about 1 millifarads, less than about 3 millifarads, less than about 10 millifarads.
39. A switch-generated DC powered computer system as described in claim37 wherein said
15 driver has a drive amplitude, and further comprising direct drive bias alteration circuitry to which said driver is responsive and which is responsive to said drive amplitude.
40. A method of switch-mode powering a DC computer system comprising the steps of:
- a. supplying an AC utility power having a line frequency;
 - b. rectifying said AC utility power to a DC signal;
 - 20 c. inverting said DC signal utilizing at least one switch to establish an alternating power output;
 - d. driving said switch to establish a frequency;
 - e. distributing a substantially sinusoidal signal to a location electrically remote from said switch;
 - 25 f. remotely rectifying said substantially sinusoidal signal at a location electrically near at least one computer component to establish a component DC supply voltage; and
 - g. powering said computer component responsive to said component DC supply voltage.
41. A method of switch-mode powering a DC computer system as described in claim40

wherein said step of inverting said DC signal utilizing at least one switch to establish an alternating power output has an inverter period, wherein said computer component is capable of a rapid energy demand within said inverter period, wherein said computer component has at least one microprocessor affected by bypass capacitors, and further comprising the step of supplying substantially all of said rapid energy demand of said computer component within said inverter period by said bypass capacitors.

42. A method of switch-mode powering a DC computer system as described in claim 40 wherein said switch creates a trajectory after a conduction period, and further comprising the steps of:
- a. establishing a constant output voltage through circuitry which is responsive to said alternating power output of said switch;
 - b. establishing a constant trajectory through circuitry which is also responsive to said alternating power output of said switch;
 - c. maintaining component supply energy through circuitry which is also responsive to said alternating power output of said switch; and
 - d. stabilizing said alternating power output through circuitry which is also responsive to said alternating power output of said switch.
43. A method of switch-mode powering a DC computer system as described in claim 42 wherein said step of driving said switch to establish a frequency establishes a drive bias, and further comprising the steps of:
- a. altering said drive bias through circuitry to which said step of driving said switch is responsive; and
 - b. directly controlling said drive bias through a network to which said drive bias is responsive.
44. A high frequency power generator to provide power to a load comprising:
- a. a supply of power;
 - b. a high frequency driver;
 - c. at least one switch responsive to said high frequency driver and said supply of power wherein said high frequency driver causes said switch to have on-off transition events,

and wherein said at least one switch establishes a high frequency alternating power output;

d. a variable load which is responsive to said high frequency alternating power output; and

e. a substantially load-independent, substantially trajectory-fixed passive response network
5 which is responsive to said high frequency alternating power output of said switch.

45. A high frequency power generator as described in claim44 wherein said substantially load-independent, substantially trajectory-fixed passive response network comprises a continuous second derivative of voltage with respect to time passive response network.

46. A high frequency power generator as described in claim44 wherein said at least one
10 switch comprises two switches which operate in conjunction to establish said high frequency alternating power output.

47. A high frequency power generator as described in claim46 wherein said two switches comprise a half bridge configuration.

48. A high frequency power generator as described in claim47 wherein said two switches are
15 sequentially operated and act to create transition events in between either switch being in a conductive state, wherein a trajectory occurs in each of said transition events, and wherein said substantially load-independent, substantially trajectory-fixed passive response network acts to control said trajectory during said transition events.

49. A high frequency power generator as described in claim48 wherein said variable load
20 comprises a substantially real load.

50. A high frequency power generator as described in claim49 wherein said substantially real load has a nominal load and wherein said substantially real load comprises a load which is capable of varying from said nominal load to an open circuit.

51. A high frequency power generator as described in claim49 wherein said substantially real
25 load has a nominal load and wherein said substantially real load comprises a load which

is capable of varying from said nominal load to a short circuit.

52. A high frequency power generator as described in claim 44 wherein said high frequency driver has a drive amplitude, and further comprising direct drive bias alteration circuitry to which said high frequency driver is responsive and which is responsive to said drive amplitude.
53. A high frequency power generator as described in claim52 wherein said at least one switch comprises two switches which each establish a conduction angle, and wherein said direct drive bias alteration circuitry maintains said conduction angles.
54. A high frequency power generator as described in claim52 wherein said direct drive bias alteration circuitry comprises:
- 10 a. voltage divider circuitry; and
- b. at least one diode element.
55. A method of generating high frequency power to provide power to a load comprising the steps of:
- 15 a. supplying power;
- b. inverting said power by causing at least one switch to have on-off transition events which create a trajectory after a conduction period to establish a high frequency alternating power output;
- c. high frequency driving said switch;
- 20 d. powering a variable load responsive to said high frequency alternating power output; and
- e. passively responding to said variable load to establish said trajectory as substantially-fixed irrespective of said variable load.
56. A method of generating high frequency power to provide power to a load as described in claim55 wherein said step of passively responding to said variable load to establish said trajectory as substantially-fixed irrespective of said variable load comprises the step of passively establishing a continuous second derivative of voltage with respect to time in said trajectory.
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57. A method of generating high frequency power to provide power to a load as described in claim55 wherein said step of inverting said power by causing at least one switch to have on-off transition events which create a trajectory after a conduction period to establish a high frequency alternating power output comprises the step of sequentially
5 operating two switches to create transition events in between either switch being in a conductive state, wherein a trajectory occurs in each of said transition events, and wherein said step of passively responding to said variable load to establish said trajectory as substantially-fixed irrespective of said variable load comprises the step of controlling said trajectory during said transition events.
- 10 58. A method of generating high frequency power to provide power to a load as described in claim57 wherein said step of high frequency driving said switch has a drive amplitude and establishes a drive bias, and further comprising the step of directly altering said drive bias through circuitry which is responsive to said drive amplitude.
59. A high frequency power generator to provide power to a variable load comprising:
15 a. a supply of power;
b. a high frequency driver;
c. at least one switch responsive to said high frequency driver and said supply of power wherein said at least one switch establishes a high frequency alternating power output;
d. a variable load which is responsive to said high frequency alternating power output; and
20 e. a passive, high efficiency, constant output response network which is responsive to said high frequency alternating power output of said switch and which provides a substantially constant output regardless of said variable load.
60. A high frequency power generator as described in claim59 wherein said passive, high efficiency, constant output response network provides a substantially constant output
25 selected from a group consisting of:
- a substantially constant switch voltage output which is substantially constant over all levels at which said variable load exists practically,
- a substantially constant load voltage input which is substantially constant over all levels at which said variable load exists practically,

- a substantially constant switch voltage Fourier transform which is substantially constant over all levels at which said variable load exists practically,
- a substantially constant switch voltage output waveform which is substantially constant over all levels at which said variable load exists practically,
- 5 - a substantially constant switch voltage transition endpoint which is substantially constant over all levels at which said variable load exists practically, and
- all permutations and combinations of each of the above

61. A high frequency power generator as described in claim59 wherein said passive, high efficiency, constant output response network comprises a fast-acting response network.
- 10 62. A high frequency power generator as described in claim59 wherein said variable load comprises a variable DC load and further comprising a rectifier element which converts said high frequency alternating power output to a component DC supply voltage and to which said variable DC load is responsive.
- 15 63. A high frequency power generator as described in claim62 wherein said variable DC load comprises a load which is capable of varying from said nominal load to an open circuit.
64. A high frequency power generator as described in claim62 wherein said variable DC load comprises a load which is capable of varying from said nominal load to a short circuit.
65. A high frequency power generator as described in claim59 wherein said passive, high efficiency, constant output response network has no steering diodes.
- 20 66. A high frequency power generator as described in claim59 wherein said high frequency driver has a drive amplitude, and further comprising direct drive bias alteration circuitry to which said high frequency driver is responsive and which is responsive to said drive amplitude.
- 25 67. A high frequency power generator as described in claim66 wherein said at least one switch comprises two switches which each establish a conduction angle, and wherein

said direct drive bias alteration circuitry maintains said conduction angles.

68. A high frequency power generator as described in claim66 wherein said direct drive bias alteration circuitry comprises:
- a. voltage divider circuitry; and
 - 5 b. at least one diode element.
69. A system as described in claim59 wherein said network comprises a network with no feedback system.
70. A method of generating high frequency power to provide power to a load comprising the steps of:
- 10 a. supplying power;
 - b. inverting said power through at least one switch to establish a high frequency alternating power output;
 - c. high frequency driving said switch;
 - d. powering a variable load responsive to said high frequency alternating power output; and
 - 15 e. passively responding to said variable load to establish a high efficiency constant output irrespective of said variable load.
71. A method of generating high frequency power to provide power to a load as described in claim70 wherein said step of passively responding to said variable load to establish a high efficiency constant output irrespective of said variable load establishes a constant
- 20 output selected from a group consisting of:
- a substantially constant switch voltage output which is substantially constant over all levels at which said variable load exists practically,
 - a substantially constant load voltage input which is substantially constant over all levels at which said variable load exists practically,
 - 25 - a substantially constant switch voltage Fourier transform which is substantially constant over all levels at which said variable load exists practically,
 - a substantially constant switch voltage output waveform which is substantially constant over all levels at which said variable load exists practically,

- a substantially constant switch voltage transition endpoint which is substantially constant over all levels at which said variable load exists practically, and
- all permutations and combinations of each of the above

72. A method of generating high frequency power to provide power to a load as described in claim 70 wherein said step of passively responding to said variable load to establish a high efficiency constant output irrespective of said variable load comprises the step of responding to variations in said varying load by a fast acting response network.
73. A radio frequency power generator to provide power to a variable load comprising:
- a. a supply of power;
 - b. a frequency driver;
 - c. a switch-mode inverter having at least one switch responsive to said frequency driver and said supply of power wherein said switch-mode inverter establishes an alternating power output at a frequency;
 - d. a variable load which is responsive to said alternating power output; and
 - e. a passive, constant end point response network which is responsive to said alternating power output of said switch and which provides substantially constant end points regardless of said variable load.
74. A radio frequency power generator as described in claim 73 wherein said switch-mode inverter has at least one switch, wherein said switch creates a response period during which said switch is not conducting, said response period having an end point, and wherein said passive, constant end point response network acts to maintain said end point substantially constant over all levels at which said variable load exists practically.
75. A radio frequency power generator as described in claim 74 wherein said switch has a switch DC supply voltage, wherein said switch creates a response period during which said switch is not conducting, said response period having an end point, and wherein said passive, constant end point response network maintains said end point at a level selected from a group consisting of: zero volts, a voltage which is less than a diode turn-on level, less than about 5% of said switch DC supply voltage, less than about 10% of said switch

DC supply voltage, less than about 20% of said switch DC supply voltage, and less than about 50% of said switch DC supply voltage, each over all levels at which said variable load exists practically.

- 5 76. A radio frequency power generator as described in claim 75 wherein said switch-mode inverter comprises two switches which operate in conjunction to establish said alternating power output.
77. A radio frequency power generator as described in claim 75 wherein said switch-mode inverter comprises one switch.
- 10 78. A radio frequency power generator as described in claim 76 wherein said frequency driver has a drive amplitude, and further comprising direct drive bias alteration circuitry to which said frequency driver is responsive and which is responsive to said drive amplitude.
- 15 79. A high frequency power generator as described in claim 78 wherein said at least one switch comprises two switches which each establish a conduction angle, and wherein said direct drive bias alteration circuitry maintains said conduction angles.
80. A high frequency power generator as described in claim 78 wherein said direct drive bias alteration circuitry comprises:
- a. voltage divider circuitry; and
 - b. at least one diode element.
- 20 81. A method of generating high frequency power to provide power to a load comprising the steps of:
- a. supplying power;
 - b. inverting said power through at least one switch to establish an alternating power output at a frequency;
 - 25 c. driving said switch so as to establish a response period during which said switch is not conducting, said response period having an end point;

- d. powering a variable load responsive to said alternating power output; and
 - e. passively responding to said variable load to constantly maintain said end point irrespective of said variable load.
82. A method of generating high frequency power to provide power to a load as described in claim 81 wherein said switch has a switch DC supply voltage, and wherein said step of passively responding to said variable load to constantly maintain said end point irrespective of said variable load maintains said end point at a level selected from a group consisting of: zero volts, a voltage which is less than a diode turn-on level, less than about 5% of said switch DC supply voltage, less than about 10% of said switch DC supply voltage, less than about 20% of said switch DC supply voltage, and less than about 50% of said switch DC supply voltage, each over all levels at which said variable load exists practically.
83. A high frequency power generator to provide power to a load comprising:
- a. a supply of power;
 - b. a high frequency driver;
 - c. at least one switch responsive to said high frequency driver and said supply of power, having a body diode feature, wherein said at least one switch establishes a high frequency alternating power output;
 - d. a variable load which is responsive to said high frequency alternating power output; and
 - e. a passive conduction prevention response network which is responsive to said high frequency alternating power output of said switch and which prevents said body diode feature from transitioning to a conduction state.
84. A high frequency power generator as described in claim 83 wherein said passive conduction prevention response network comprises a fast-acting response network.
85. A high frequency power generator as described in claim 83 wherein said passive conduction prevention response network has no steering diodes.
86. A high frequency power generator as described in claim 83 wherein said variable load

comprises a substantially real load.

87. A high frequency power generator as described in claim86 wherein said load is capable of varying from said nominal load to an open circuit.
88. A high frequency power generator as described in claim86 wherein said load is capable of varying from said nominal load to a short circuit.
89. A method of generating high frequency power to provide power to a load comprising the steps of:
- a. supplying power;
 - b. inverting said power through at least one switch, having a body diode feature, to establish a high frequency alternating power output;
 - c. high frequency driving said switch;
 - d. powering a variable load responsive to said high frequency alternating power output; and
 - e. passively responding to said variable load in a manner which prevents said body diode feature from transitioning to a conduction state.
90. A method of generating high frequency power to provide power to a load as described in claim89 wherein said step of passively responding to said variable load in a manner which prevents said body diode feature from transitioning to a conduction state comprises the step of responding to variations in said varying load through a fast acting response network.
91. A method of generating high frequency power to provide power to a load as described in claim89 wherein said step of powering a variable load responsive to said high frequency alternating power output comprises the step of powering a substantially real load responsive to said high frequency alternating power output.
92. A method of generating high frequency power to provide power to a load as described in claim91 wherein said load has a nominal load and wherein said step of passively responding to said variable load in a manner which prevents said body diode feature from

transitioning to a conduction state comprises the step of passively responding to said variable load in a manner which prevents said body diode feature from transitioning to a conduction state over a range of from said nominal load to an open circuit.

93. A method of generating high frequency power to provide power to a load as described in claim91 wherein said load has a nominal load and wherein said step of passively responding to said variable load in a manner which prevents said body diode feature from transitioning to a conduction state comprises the step of passively responding to said variable load in a manner which prevents said body diode feature from transitioning to a conduction state over a range of from said nominal load to responding to a short circuit.
94. A radio frequency power generator to provide power to a load comprising:
- a. a supply of power;
 - b. a substantially sinusoidal AC drive element with a drive amplitude;
 - c. multiple switches responsive to said AC drive element and said supply of power wherein said multiple switches establish a alternating power output at a frequency;
 - d. direct drive bias alteration circuitry to which said AC drive element is responsive and which is responsive to said drive amplitude; and
 - e. a load which is responsive to said alternating power output.
95. A radio frequency power generator as described in claim94 wherein said multiple switches comprise two switches which operate in conjunction to establish said alternating power output.
96. A radio frequency power generator as described in claim95 wherein said two switches comprise a half bridge configuration.
97. A radio frequency power generator as described in claim96 wherein said two switches are sequentially operated and act to create transition events in between either switch being in a conductive state, wherein each of said transition events has a transition period, and wherein said direct control network controls said drive bias alteration circuitry to

maintain the duration of said transition period.

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98. A radio frequency power generator as described in claim96 wherein said drive bias alteration circuitry comprises a drive bias alteration circuit for each of said switches, and wherein said direct control network comprises a direct control network for each of said switches.
99. A radio frequency power generator as described in claim97 wherein said two switches each establish a conduction angle, and wherein said direct control network maintains said conduction angles.
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100. A radio frequency power generator as described in claim94 wherein said direct drive bias alteration circuitry comprises:
- a. voltage divider circuitry; and
 - b. at least one diode element.
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101. A radio frequency power generator as described in claim99 and further comprising constant output voltage circuitry which is responsive to said alternating power output of said multiple switches.
102. A radio frequency power generator as described in claim101 and further comprising constant trajectory circuitry which is also responsive to said alternating power output of said multiple switches.
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103. A radio frequency power generator as described in claim102 and further comprising energy maintenance circuitry which is also responsive to said alternating power output of said multiple switches.
104. A radio frequency power generator as described in claim103 and further comprising stabilizing circuitry which is also responsive to said alternating power output of said multiple switches.

105. A radio frequency power generator as described in claim 101, 102, 102, or 104 wherein said multiple switches have output capacitance, and wherein said circuitry is tuned to coordinate with the frequency of said alternating power output and output capacitance.
106. A radio frequency power generator as described in claim 105 wherein said substantially sinusoidal AC drive element comprises a high frequency driver, and wherein said multiple switches establish a high frequency alternating power output.
107. A radio frequency power generator as described in claim 106 wherein said direct control network comprises a network with no feedback system.
108. A method of generating radio frequency power to provide power to a load comprising the steps of:
- a. supplying power;
 - b. inverting said power through multiple switches to establish an alternating power output;
 - c. substantially sinusoidally driving said switches with a drive amplitude and utilizing a drive bias to create an alternating power output;
 - d. directly altering said drive bias through circuitry which is responsive to said drive amplitude; and
 - e. powering a variable load responsive to said alternating power output;
109. A method of generating radio frequency power to provide power to a load as described in claim 108 wherein said step of inverting said power through multiple switches to establish an alternating power output comprises the step of sequentially operating two switches to create transition events in between either switch being in a conductive state in a manner which is responsive to said step of directly controlling said drive bias through a network to which said drive bias is responsive.
110. A method of generating radio frequency power to provide power to a load as described in claim 109 wherein each switch has a drive bias, and wherein said step of substantially sinusoidally driving said switches utilizing a drive bias to create an alternating power output comprises the step of directly controlling the drive bias of each switch.

111. A method of generating radio frequency power to provide power to a load as described in claim 108 and further comprising the steps of:
- a. establishing a constant output voltage through circuitry which is responsive to said alternating power output of said switch;
 - 5 b. establishing a constant trajectory through circuitry which is also responsive to said alternating power output of said switch;
 - c. maintaining component supply energy through circuitry which is also responsive to said alternating power output of said switch; and
 - d. stabilizing said alternating power output through circuitry which is also responsive to
10 said alternating power output of said switch.
112. A method of generating radio frequency power to provide power to a load as described in claim 111 wherein said switches have output capacitance, and further comprising the step of tuning said circuitry to said frequency of operation and said output capacitance.
113. A method of generating radio frequency power to provide power to a load as described
15 in claim 112 wherein said step of substantially sinusoidally driving said switches utilizing a drive bias to create an alternating power output comprises the step of high frequency driving said switch to create a high frequency alternating power output.
114. A system as described in claim 59, 44, 83, 94, or 28 wherein said high frequency driver
20 comprises a frequency driver operating at a frequency selected from a group consisting of: a frequency greater than at least about 300 kHz, a frequency greater than at least about 500 kHz, a frequency greater than at least about 1 MHz, a frequency greater than at least about 3 MHz, a frequency greater than at least about 10 MHz, and a frequency greater than at least about 30 MHz.
115. A system as described in claim 1 or 28 wherein said computer component is capable of
25 a rapid current demand which rises at a level selected from a group consisting of: at least about 0.2 amperes per nanosecond, at least about 0.5 amperes per nanosecond, at least about 1 ampere per nanosecond, at least about 3 amperes per nanosecond, at least about 10 amperes per nanosecond, and at least about 30 amperes per nanosecond.

116. A system as described in claim 48 or 94 wherein said load is capable of a rapid current demand which rises at a level selected from a group consisting of: at least about 0.2 amperes per nanosecond, at least about 0.5 amperes per nanosecond, at least about 1 ampere per nanosecond, at least about 3 amperes per nanosecond, at least about 10
5 amperes per nanosecond, and at least about 30 amperes per nanosecond.
117. A system as described in claim 59, 44, 83, or 94 wherein said network comprises a fast acting response network.
118. A system as described in claim 117 wherein said fast acting response network comprises a network having an effective capacitance selected from a group consisting of: less than
10 about 0.3 millifarads, less than about 0.5 millifarads, less than about 1 millifarads, less than about 3 millifarads, less than about 10 millifarads.
119. A system as described in claim 117 wherein said fast acting response network comprises a response network which is capable of reacting within a period of time selected from a group consisting of:
- 15 - less than about a period of a Nyquist frequency,
- less than about two and a half times a period of a Nyquist frequency,
- less than about five times a period of a Nyquist frequency,
- less than about ten times a period of a Nyquist frequency,
- less than about twice a period of said alternating power output,
20 - less than about four times a period of said alternating power output,
- less than about 200 nanoseconds,
- less than about 500 nanoseconds,
- less than about 1000 nanoseconds, and
- less than about 2000 nanoseconds.
- 25 120. A system as described in claim 59, 44, 83, 94, or 28 wherein said load comprises a load operating at a nominal DC voltage selected from a group consisting of: less than about 2 volts, less than about 1.8 volts, less than about 1.5 volts, less than about 1.3 volts, less than about 1 volt, and less than about 0.4 volts.

121. A system as described in claim 120 wherein said load comprises a load operating at a maximum current selected from a group consisting of: more than about 15 amperes, more than about 20 amperes, and more than about 50 amperes.
122. A system as described in claim 59, 44, 83, or 94 wherein said network comprises a high efficiency response network.
123. A system as described in claim 122 wherein said high efficiency response network comprises a response network having an efficiency selected from a group consisting of: at least about 80%, at least about 85%, at least about 90%, at least about 95%, at least about 98% and at least about 99%.
124. A system as described in claim 1, 59, 73, 83, or 28 wherein said switch is part of a single switch amplifier.
125. A system as described in claim 124 wherein said single switch amplifier comprises a single switch amplifier selected from a group consisting of: a class E amplifier, a class AE amplifier, and a class C amplifier.
126. A system as described in claim 1, 59, 44, 73, 83, or 28 wherein said switch is part of a dual switch amplifier.
127. A system as described in claim 59, 44, 73, or 83 wherein said network comprises constant output voltage circuitry which is responsive to said alternating power output of said switch.
128. A system as described in claim 127 wherein said network further comprises constant trajectory circuitry which is also responsive to said alternating power output of said switch.
129. A system as described in claim 128 wherein said network further comprises:
- a. drive bias alteration circuitry to which said drive is responsive and having a control

- input; and
- b. a direct control network which provides the control input to said drive bias alteration circuitry.
130. A system as described in claim128 wherein said network further comprises energy
5 maintenance circuitry which is also responsive to said alternating power output of said switch.
131. A system as described in claim130 wherein said network further comprises stabilizing circuitry which is also responsive to said alternating power output of said switch.
132. A system as described in claim128 wherein said switch has output capacitance, and
10 wherein said circuitry is tuned to coordinate with the frequency of said alternating power output and output capacitance.
133. A system as described in claim131 wherein said circuitry comprises circuitry with no feedback system.
134. A system as described in claim117 wherein said network comprises a network with no
15 feedback system.
135. A power conversion circuit comprising:
- a. a source of dc input voltage;
- b. at least one switch operating at a frequency, and having an on time, during which the
20 voltage across said switch is substantially zero, an off time, during which the current through said switch is substantially zero, and transition times between said on time and said off time which are short compared to either said on time or said off time;
- c. a network connected to said switch which responds to the operation of said switch to produce a switch voltage waveform and an ac output voltage waveform across a load conductance which can vary from zero to a nominal maximum;
- 25 wherein said on and off times are substantially constant and wherein the value of said switch voltage waveform at the commencement of said on said time is substantially

independent of the value of said load conductance.

136. The power conversion system as described in claim135 wherein said switch voltage waveform has a Fourier component & wherein the Fourier component of said switch voltage waveform at said frequency is substantially independent of variations in the value of said load conductance.
137. The power conversion system as described in claim136 wherein said switch voltage waveform has a shape and wherein the shape of said switch voltage waveform is independent of variations in the value of said load conductance.
138. The power conversion system as described in claim135 wherein said ac output voltage waveform is substantially independent of variations in the value of said load conductance.
139. The power conversion system as described in claim136, 137, or 138 wherein said switch has an input drive signal and wherein said input drive signal is substantially independent of variations in the value of said load conductance.
140. The power conversion system as described in claim139 wherein said drive signal has a waveform which is substantially sinusoidal.
141. The power conversion system as described in claim140 wherein said switch has input capacitance and wherein said drive signal is created by circuitry affirmatively utilizing the input capacitance of said switch.
142. The power conversion system as described in claim141 wherein said circuitry affirmatively uses said input capacitance by recovering the energy stored in said input capacitance.
143. The power conversion system as described in claim142 wherein said circuitry recovers said energy through the utilization of a resonant circuit with said input capacitance.
144. The power conversion system as described in claim135 wherein said off time is

approximately twice said on time.

145. The power conversion system as described in claim135 wherein the peak value of said switch voltage waveform is less than 2.5 times said dc input voltage.
146. The power conversion system as described in claim135 wherein said switch has an input
5 drive signal comprised of a dc drive voltage superimposed on an approximately sinusoidal waveform.
147. The power conversion system as described in claim146 wherein said on time is controlled by controlling said dc drive voltage.
148. The power conversion system as described in claim146 wherein said dc input voltage has
10 a low frequency ripple superimposed and wherein modulation of said output voltage waveform by said low frequency ripple is counteracted by superposition of a signal derived from said low frequency ripple on said input drive signal.
149. The power conversion system as described in claim135 wherein said at least one switch comprises only one switch.
- 15 150. The power conversion system as described in claim135 wherein said network further comprises a transformer.
151. The power conversion system as described in claim150 wherein said transformer has leakage inductance and wherein said network affirmatively utilizes the leakage inductance of said transformer.
- 20 152. The power conversion system as described in claim150 wherein said transformer has magnetization inductance and wherein said network affirmatively utilizes the magnetization inductance of said transformer.
153. The power conversion system as described in claim150 wherein said transformer has

nonlinear transfer characteristics and wherein said network affirmatively utilizes the nonlinear transfer characteristics of said transformer.

154. A method of powering electronic circuitry comprising the steps of:
- a. providing a dc input voltage;
 - 5 b. switching said input voltage with an electronic switch operating at a frequency, and having an on time, during which the voltage across said switch is substantially zero, an off time, during which the current through said switch is substantially zero, and transition times between said on time and said off time to produce a switched waveform;
 - 10 c. processing said switched waveform with a network to produce an output waveform to which a load conductance is responsive, which conductance can vary from a nominal minimum to a nominal maximum;
 - d. maintaining said on and off times substantially constant; while
 - e. maintaining the value of said voltage waveform at the commencement of said on time
 - 15 substantially independent of the value of said load conductance.
155. The method of powering electronic circuitry as described in claim 154 wherein said switch waveform has a Fourier capacitance to and further comprising the step of maintaining the Fourier component of said switched waveform at said frequency substantially independent of variations in the value of said load conductance.
- 20 156. The method of powering electronic circuitry as described in claim 155 wherein said switch waveform has a shape and further comprising the step of maintaining the shape of said switched waveform substantially independent of variations in the value of said load conductance.
157. The method of powering electronic circuitry as described in claim 154 wherein said output waveform is a sinusoidal output voltage waveform and further comprising the step of maintaining said sinusoidal output voltage waveform substantially independent of variations in the value of said load conductance.
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158. The method of powering electronic circuitry as described in claim155 or157 and further comprising the steps of:
- a. providing said switch with an input drive signal and;
 - b. maintaining said input drive signal substantially independent of variations in the value of said load conductance.
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159. The method of powering electronic circuitry as described in claim158 and further comprising the step of providing an input drive signal waveform which is substantially sinusoidal.
160. The method of powering electronic circuitry as described in claim158 wherein said switch has input capacitance and further comprising the step of affirmatively utilizing the input capacitance of said switch.
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161. The power conversion system as described in claim 26 wherein said circuitry affirmatively uses said input capacitance by recovering the energy stored in said input capacitance.
162. The power conversion system as described in claim161 wherein said circuitry recovers said energy through the utilization of a resonant circuit with said input capacitance.
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163. The method of powering electronic circuitry as described in claim154 and further comprising the step of adjusting said off time to be approximately twice said on time.
164. The method of powering electronic circuitry as described in claim154 wherein said switch waveform has a peak value and further comprising the step of providing that the peak value of said switch waveform is less than 2.5 times said dc input voltage.
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165. The method of powering electronic circuitry as described in claim154 and further comprising the step of providing said switch with an input drive signal comprising a dc drive voltage superimposed on an approximately sinusoidal waveform.
166. The method of powering electronic circuitry as described in claim165 and further

comprising the step of controlling said on time by controlling said dc drive voltage.

167. The method of powering electronic circuitry as described in claim165 and further comprising the step of counteracting modulation of said output voltage waveform by low frequency ripple superimposed on said dc input voltage, by the further step of superimposing on said input drive signal a signal derived from ripple superimposed on said dc input voltage.
168. The method of powering electronic circuitry as described in claim154 wherein said step of switching further comprises the step of providing a single electronic switch.
169. The method of powering electronic circuitry as described in claim154 wherein said step of processing further comprises the step of passing said switched waveform through a network comprising a transformer.
170. The method of powering electronic circuitry as described in claim169 wherein said transformer has a leakage inductance and wherein said step of processing further comprises the step of affirmatively utilizing the leakage inductance of said transformer.
171. The method of powering electronic circuitry as described in claim169 wherein said transformer has a magnetization inductance and wherein said step of processing further comprises the step of affirmatively utilizing the magnetization inductance of said transformer.
172. The method of powering electronic circuitry as described in claim169 wherein said transfer has nonlinear transfer characteristics and wherein said step of processing further comprises the step of affirmatively utilizing the nonlinear transfer characteristics of said transformer.
173. A power conversion circuit comprising:
- a. a source of dc input voltage;
 - b. a first inductor and at least one semiconductor switch having adjunct capacitance connected in series across said source, said switch operating at a frequency, and having

an on time, during which the voltage across said switch is substantially zero, an off time, during which the current through said switch is substantially zero, and transition times between said on time and said off time which are short compared to either said on time or said off time;

- 5 c. a first capacitor connected in parallel across said switch chosen such that said first inductor and the adjunct capacitance of said switch together with said first capacitor form a first resonant circuit at said frequency;
- d. a load conductance which can vary from a nominal minimum to a nominal maximum;
- 10 e. a network comprising a second inductor and a second capacitor in series forming a second resonant circuit at said frequency, said network connected in series with said load, the series combination of said network and said load connected in parallel with said switch;

wherein said on and off times are substantially constant and wherein the voltage across said switch at the commencement of said on time is substantially independent of the value of said load conductance.

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174. The power conversion circuit as described in claim 173 further comprising a third inductor and third capacitor forming a third resonant circuit at said frequency, said third inductor and said third capacitor each placed in parallel with said load conductance.

175. The power conversion circuit as described in claim 173 or 174 wherein said switch has a switch voltage waveform across it, having a Fourier component and wherein the Fourier component of the voltage waveform across said switch at said frequency is substantially independent of variations in the value of said load conductance.

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176. The power conversion circuit as described in claim 175 wherein said switch voltage waveform has a shape and wherein the shape of said switch voltage waveform is independent of variations in the value of said load conductance.

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177. The power conversion circuit as described in claim 173 wherein the voltage across said load conductance is independent of variations in the value of said load conductance.

178. The power conversion circuit as described in claim173, 174, 175, 176, or 177 wherein said switch has an input drive signal and said input drive signal is substantially independent of variations in the value of said load conductance.
179. The power conversion circuit as described in claim178 wherein said drive signal has a waveform which is substantially sinusoidal.
180. The power conversion circuit as described in claim179 wherein said switch has input capacitance and wherein said drive signal is created by circuitry affirmatively utilizing the input capacitance of said switch.
181. The power conversion system as described in claim180 wherein said circuitry affirmatively uses said input capacitance by recovering the energy stored in said input capacitance.
182. The power conversion system as described in claim181 wherein said circuitry recovers said energy through the utilization of a resonant circuit with said input capacitance.
183. The power conversion circuit as described in claim173 wherein said off time is approximately twice said on time.
184. The power conversion circuit as described in claim173 wherein said voltage across said switch has a peak value and wherein the peak value of the voltage across said switch is less than 2.5 times said dc input voltage.
185. The power conversion circuit as described in claim173 wherein said switch has an input drive signal comprised of a dc drive voltage superimposed on an approximately sinusoidal waveform.
186. The power conversion circuit as described in claim185 wherein said on time is controlled by controlling said dc drive voltage.
187. The power conversion circuit as described in claim185 wherein said dc input voltage has

a low frequency ripple superimposed and wherein modulation of the voltage across said load conductance by said low frequency ripple is counteracted by superposition of a signal derived from said low frequency ripple on said input drive signal.

188. The power conversion circuit as described in claim 173 comprising a single switch.
- 5 189. A power conversion circuit comprising:
- a. a source of dc input voltage;
 - b. a transformer having a primary winding and at least one secondary winding, and having a magnetizing inductance and a leakage inductance;
 - c. at least one semiconductor switch having adjunct capacitance and connected in series
10 with said primary winding across said source, said switch operating at a frequency, and having an on time, during which the voltage across said switch is substantially zero, an off time, during which the current through said switch is substantially zero, and transition times between said on time and said off time;
 - d. a first inductor connected in parallel with said primary winding;
 - 15 e. a first capacitor connected in parallel across said switch, chosen such that the inductance of said first inductor together with said magnetizing inductance of said transformer, and the adjunct capacitance of said switch together with the capacitance of said first capacitor, form a first resonant circuit at said frequency;
 - f. a load conductance which can vary from a nominal minimum to a nominal maximum;
 - 20 g. a network connected in series with said secondary winding of said transformer and said load conductance, comprising a second capacitor and a second inductor, said second inductor together with the leakage inductance of said transformer and the capacitance of said second capacitor forming a second resonant circuit at said frequency;
- wherein said on and off times are substantially constant and wherein the voltage across said
25 switch at the commencement of said on time is substantially independent of the value of said load conductance.
190. The power conversion circuit as described in claim 189 wherein said first inductor value is zero.
191. The power conversion circuit as described in claim 189 wherein said second inductor value

is zero.

192. The power conversion circuit as described in claim 189, 190, or 191 further comprising a third inductor and third capacitor forming a third resonant circuit at said frequency, said third inductor and said third capacitor each placed in parallel with said load conductance.
- 5 193. The power conversion circuit as described in claim 189 or 192 wherein said switch has voltage waveform across it, said voltage waveform having a Fourier capacitance wherein the Fourier component of the voltage waveform across said switch at said frequency is substantially independent of variations in the value of said load conductance.
- 10 194. The power conversion circuit as described in claim 193 wherein said voltage waveform across said switch has a shape and wherein the shape of said switch voltage waveform is independent of variations in the value of said load conductance.
195. The power conversion circuit as described in claim 189 wherein the voltage across said load conductance is independent of variations in the value of said load conductance.
- 15 196. The power conversion circuit as described in claim 189, 190, 191 or 192 wherein said switch has an input drive signal and said input drive signal is substantially independent of variations in the value of said load conductance.
197. The power conversion circuit as described in claim 196 wherein said drive signal has a waveform which is substantially sinusoidal.
- 20 198. The power conversion system as described in claim 197 wherein said circuitry affirmatively uses said input capacitance by recovering the energy stored in said input capacitance.
199. The power conversion system as described in claim 198 wherein said circuitry recovers said energy through the utilization of a resonant circuit with said input capacitance.
200. The power conversion circuit as described in claim 197 wherein said drive signal is created

by circuitry affirmatively utilizing the input capacitance of said switch.

201. The power conversion circuit as described by claim189 wherein said off time is approximately twice said on time.
202. The power conversion circuit as described in claim189 wherein said as peak value of voltage across it and wherein the peak value of the voltage across said switch is less than 2.5 times said dc input voltage.
203. The power conversion circuit as described in claim189 wherein said switch has an input drive signal comprised of a dc drive voltage superimposed on an approximately sinusoidal waveform.
204. The power conversion circuit as described in claim203 wherein said on time is controlled by controlling said dc drive voltage.
205. The power conversion circuit as described in claim203 wherein said dc input voltage has a low frequency ripple superimposed and wherein modulation of the voltage across said load conductance by said low frequency ripple is counteracted by superposition of a signal derived from said low frequency ripple on said input drive signal.
206. The power conversion circuit as described in claim189 wherein said at least one semiconductor switch comprises a single switch.
207. A power conversion circuit comprising:
- a. a source of dc input voltage;
 - b. a first inductor and at least one semiconductor switch having an input capacitance and connected in series across said source, said switch operating at a frequency, and having an on time, during which the voltage across said switch is substantially zero, an off time, during which the current through said switch is substantially zero, and transition times between said on time and said off time;
 - c. a first capacitor connected in parallel across said switch and forming a junction with

said first induction;

- d. a load conductance which can vary from a nominal minimum to a nominal maximum;
- e. a second inductor and second capacitor connected in series across said load conductance, said second capacitor sharing a common connection with said first capacitor and said source and said second inductor;
- f. a third inductor and third capacitor connected in series from the junction of said first capacitor and said first inductor to the common point of connection of said second capacitor and said second inductor;

wherein said on and off times are substantially constant and wherein the voltage across said switch at the commencement of said on time is substantially independent of the value of said load conductance.

208. The power conversion circuit as described in claim207 wherein said switch has a voltage waveform across it, said voltage waveform having a Fourier component and wherein the Fourier component of the voltage waveform across said switch at said frequency is substantially independent of variations in the value of said load conductance.

209. The power conversion circuit as described in claim207 wherein said switch has a voltage waveform across it, said voltage waveform having a shape, and wherein the shape of said switch voltage waveform is independent of variations in the value of said load conductance.

210. The power conversion circuit as described in claim207 wherein the voltage across said load conductance is independent of variations in the value of said load conductance.

211. The power conversion circuit as described in claim207 wherein said switch has an input drive signal and said input drive signal is substantially independent of variations in the value of said load conductance.

212. The power conversion circuit as described in claim211 wherein said drive signal has a waveform which is substantially sinusoidal.

213. The power conversion circuit as described in claim212 wherein said drive signal is created

by circuitry affirmatively utilizing the input capacitance of said switch.

214. The power conversion system as described in claim213 wherein said circuitry affirmatively uses said input capacitance by recovering the energy stored in said input capacitance.
215. The power conversion system as described in claim214 wherein said circuitry recovers said
5 energy through the utilization of a resonant circuit with said input capacitance.
216. The power conversion circuit as described by claim207 wherein said off time is approximately twice said on time.
217. The power conversion circuit as described in claim207 wherein said voltage across said switch has a peak value and wherein the peak value of the voltage across said switch is less
10 than 2.5 times said dc input voltage.
218. The power conversion circuit as described in claim207 wherein said switch has an input drive signal comprised of a dc drive voltage superimposed on an approximately sinusoidal waveform.
219. The power conversion circuit as described in claim218 wherein said on time is controlled
15 by controlling said dc drive voltage.
220. The power conversion circuit as described in claim218 wherein said dc input voltage has a low frequency ripple superimposed and wherein modulation of the voltage across said load conductance by said low frequency ripple is counteracted by superposition of a signal derived from said low frequency ripple on said input drive signal.
- 20 221. The power conversion circuit as described in claim207 wherein said at least one semiconductor switch comprises a single switch.